



ecology and environment, inc.

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International Specialists in the Environment

MEMORANDUM

TO Pete Culver, RPO

THRU John Caoile, FITOM

FROM Bob Overfelt, E & E/FIT

DATE August 4, 1988

SUBJECT Data Summary for the Limited Sampling of the Big River
Mine Tailings Site located in Desloge, Missouri
TDD #F-07-8805-008 PAN #FM00616SA
Site #X75 Project #001
Superfund Contact Gene Gunn

Site Big River Mine	
ID#	MOB 981126899
Break	1.3
Other	242
8-4-88	

07CR

INTRODUCTION

The Ecology and Environment, Inc., Field Investigation Team (E & E/FIT) was assigned by the Region VII U S Environmental Protection Agency (EPA) to conduct a limited site investigation of the Big River Mine Tailings site in Desloge, Missouri. This work was authorized under Technical Directive Document (TDD) #F-07-8711-039. The investigation included sampling of the mine tailings and the collection of background soil samples. The purpose of the investigation was to obtain current data on the heavy metals content of the mine tailings.

SITE BACKGROUND

The Big River Mine Tailings site is located in St Francois County approximately one-half mile west of Desloge, Missouri (Figure 1). The site covers approximately 600 acres and consist mainly of mine tailings that are up to 100 feet deep. A sanitary landfill and landfill office are located on the southwest end of the site. The landfill is operated by the St Francois County Environmental Corporation which has a state permit to fill approximately 60 acres. The majority of the site is situated within a horseshoe shaped meander of the Big River.

This 600-acre site is the result of 30 years (1929 to 1958) of stockpiling lead mining wastes or tailings by the St Joe Minerals Corporation. The tailings are rich in lead (Pb), cadmium (Cd) and zinc (Zn). Because the mine tailings are easily airborne and are located

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SUPERFUND RECORDS

on the Big River air releases and surface water releases are potential problems. There is also the possibility of leachate from the on-site landfill releasing Pb and other heavy metals to the ground water and surface water.

FIELD ACTIVITIES

The E & E/FIT conducted a limited site investigation on May 16, 1988. E & E/FIT members present were Bob Overfelt, team leader, Sharon Martin, site safety officer, and Ted Faile, team member. EPA Emergency Preparedness and Response (EP&R) members present were Jeff Weatherford and Paul Doherty.

Bryant AuBuchon, manager of St. Francois County Landfill, granted access to the property when the E & E/FIT arrived on site. Mine tailings samples were taken at various locations on the site in an attempt to characterize the heavy metals content in the tailings over the site area. Additionally, a photograph was taken at each sample location. Sample series TK981 was assigned to this sampling effort.

SOIL SAMPLING

Twelve soil samples were collected: three background samples and nine on-site samples. Each sample consisted of five aliquots taken at 5-foot intervals. All samples were collected with stainless steel spoons and homogenized in aluminum pans then transferred to the appropriate sample jars.

The background samples, 011, 012, and 013, were taken approximately 2.5 miles northwest of the site or approximately 1.5 mile west of Bonne Terre, Missouri, on Airport Road (Figure 3). Sample 011 was taken approximately 250 feet west of Cabanne Course on the north side of Airport Road. Sample 012 was taken approximately 1,000 feet east of Cabanne Course in a tributary that intersects Airport Road. Sample 013 was taken approximately 0.5 miles east of Cabanne Course on Airport Road.

On-site samples were taken at various locations on the tailings pile. Sample 001 was taken on the southeast side of the site approximately 1,000 feet east of the landfill and 1,500 feet south of Big River. Sample 002 was taken approximately 250 feet from Big River on the southeast side of the site where the river bends and flows east. Samples 003, 004, and 005 were taken at approximately 1,000 foot intervals across the north central area of the site. Samples 006 and 007 were taken at approximately 2,000 foot intervals along the north perimeter of

Big River Mine Tailings
Data Summary
Page 3

the site Samples 008 and its duplicate 009D were taken on the east side of the site where the tailings slope steeply and enter the river via wind and water erosion Sample 010 was taken on the south east side of the site at Gap "E", which is a large eroded gully through which mine tailings are transported via water erosion to the river See Figures 2 and 3 for sample locations

ANALYTICAL RESULTS

Sample results were received on May 20, 1988 The soil samples were analyzed for total metals with lead (Pb), cadmium (Cd) and zinc (Zn), which are the heavy metals of primary concern Lead concentrations in the on-site samples ranged from 880 to 1,400 mg/kg Concentrations of Pb in the background samples ranged from 410 to 570 mg/kg Cadmium was detected at concentrations ranging from 8.4 to 19 mg/kg in the on-site samples No Cd was detected in the background samples Zinc was detected at concentrations ranging from 370 to 1,100 mg/kg in the on-site samples Concentrations of Zn ranged from 97 to 99 mg/kg in the background samples Table 1 summarizes sample results

SUMMARY AND CONCLUSIONS

On May 17, 1988 the E & E/FIT conducted a limited site investigation of the Big River Mine Tailings site in Desloge, Missouri The purpose of this investigation was to characterize the heavy metal content of the mine tailings

Twelve soil samples were taken nine on-site samples (with one duplicate) and three background samples Sample results were received on May 20, 1988 The Pb, Cd, and Zn concentrations in the on-site samples were significantly greater than the levels detected in background samples For further recommendations see the preliminary assessment prepared by E & E/FIT (May 1988) under TDD #F-07-8711-039

Attachments Site Location Map
 Site Map (showing on-site sample locations)
 Site Map (showing background sample locations)
 Table 1
 EPA Site Inspection Form 2070-13
 Chain-of-Custody and Field Sheets
 Data Transmittal

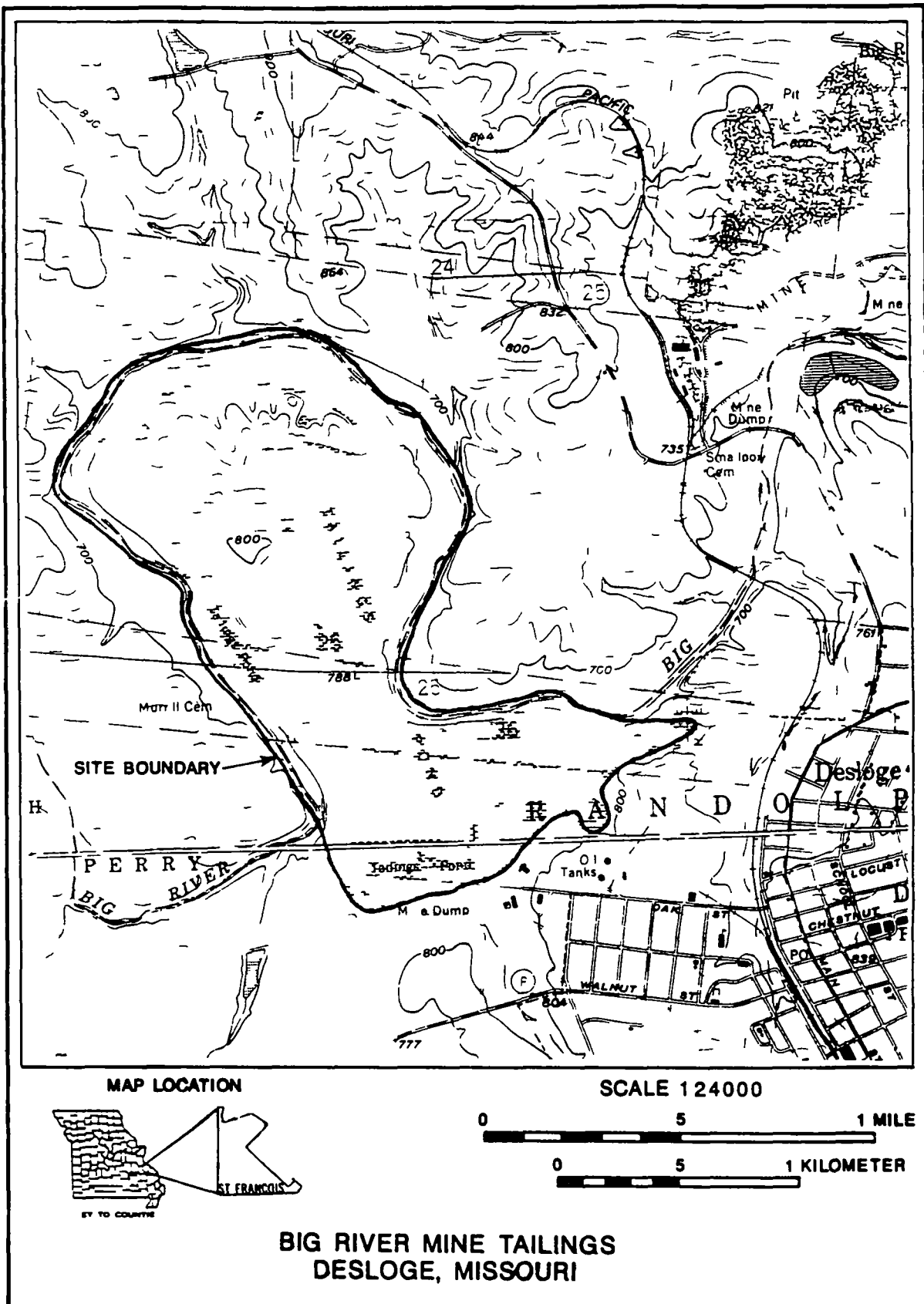
Table 1
Soil Sample Summary
Big River Mine Tailings Site
Desloge, Missouri
E & E/FIT, May 1986
Sample Series TK981

Sample #	Lead (Pb)	Cadmium (Cd)	Zinc (Zn)
001	1,200	15	830
002	1,300	17	1,000
003	1,100	12	680
004	880	16	900
005	1,000	19	1,100
006	1,300	16	810
007	970	8 4	370
008	1,200	11	610
009D	1,300	13	700
010	1,400	17	870
011*	410	ND	99
012*	560	ND	99
013*	570	ND	97

* Background

ND = Non detected

NOTE Only detected levels are reported All concentration are reported in mg/kg See Figure 2 for sample locations and data transmittal for complete analytical results



WASTE SITE TRACKING # MO0816
PREPARED BY R OVERFELT

ECOLOGY & ENVIRONMENT FIT MARCH 1988
SOURCE USGS 7 5 BONNE TERRE
& FLAT RIVER MO QUADS. 1982

FIGURE 1 SITE LOCATION

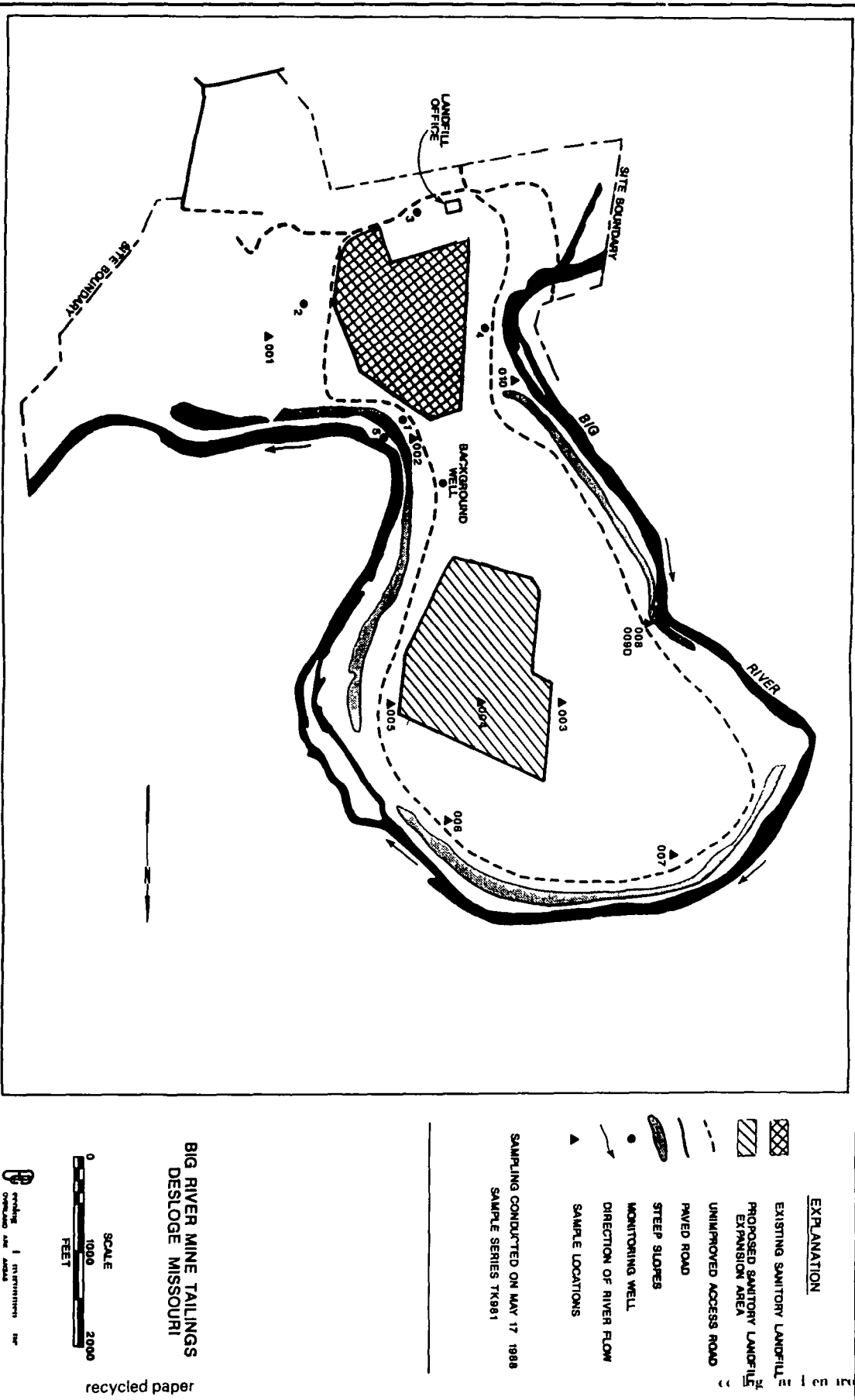
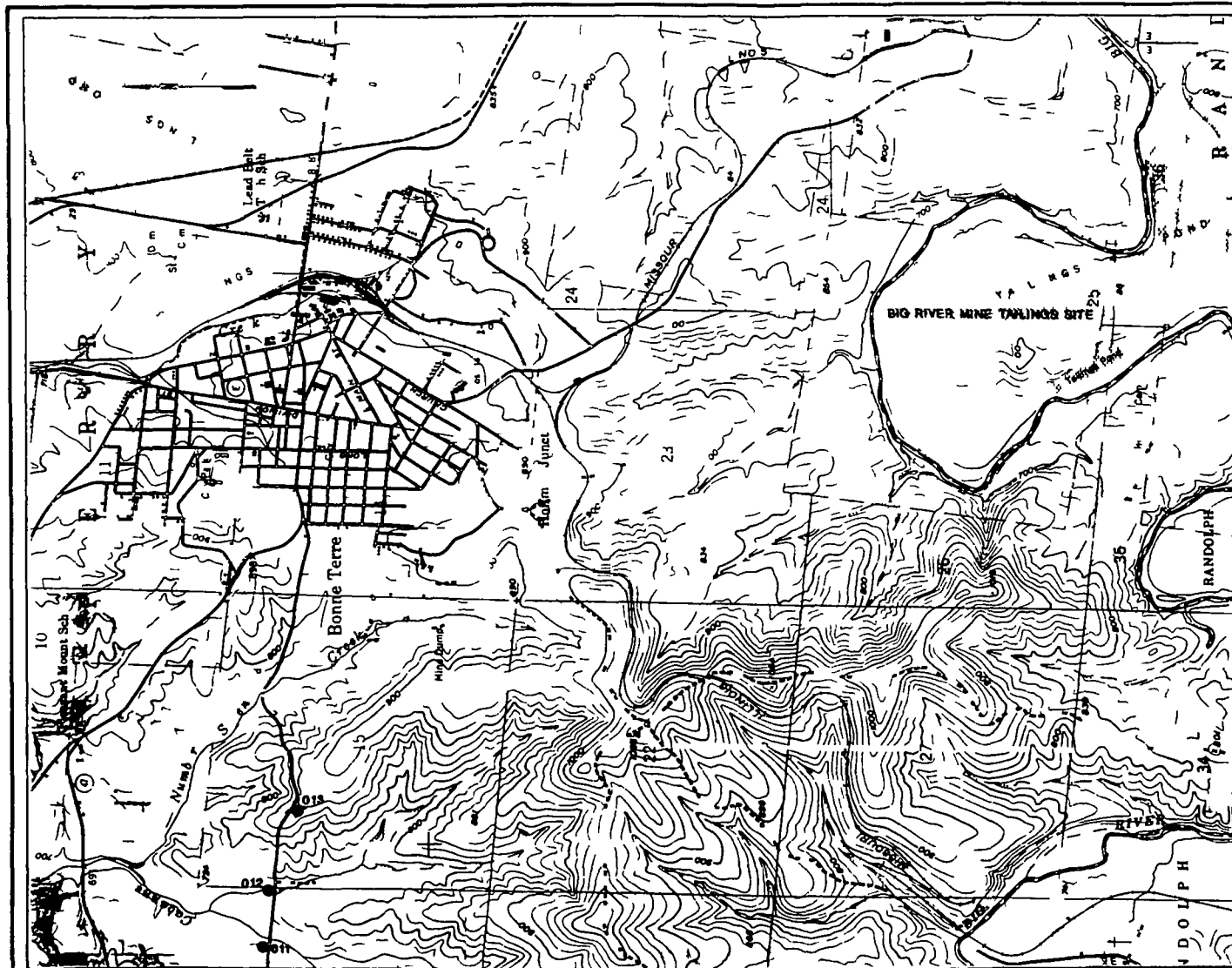


FIGURE 2 ON-SITE SAMPLE LOCATION MAP

recycled paper



EXPLANATION

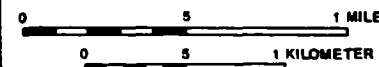
● SAMPLE LOCATION

SAMPLING CONDUCTED ON MAY 17 1988

SAMPLE SERIES TK981

**BIG RIVER MINE TAILINGS
DESLOGE, MISSOURI**

SCALE 1:24,000



 ecology and environment inc.
OVERLAND PARK, KANSAS

PREPARED BY R. OVERFELT
WASTE SITE TRACKING NO. MO0616

SOURCE: USGS 7.5' BONNE TERRE, MO QUAD 1986
FIT JULY 1988

FIGURE 3. BACKGROUND SAMPLE LOCATIONS

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT		IDENTIFICATION	
PART 1 - SITE LOCATION AND INSPECTION INFORMATION		01 STATE MOD	02 SITE NUMBER 981126899
II SITE NAME AND LOCATION			
01 SITE NAME (Legal common or descriptive name of site) Big River Mine Tailings		02 STREET ROUTE NO OR SPECIFIC LOCATION IDENTIFIER Approximately one-half miles west of Desloge Missouri	
03 CITY Desloge	04 STATE MO	05 ZIP CODE	06 COUNTY St Francois
07 COUNTY CODE		08 CONG DIST	
09 COORDINATES LATITUDE LONGITUDE 37 53 11 4 N 90 33 00 0W		10 TYPE OF OWNERSHIP (Check one) <input checked="" type="checkbox"/> A PRIVATE <input type="checkbox"/> B FEDERAL <input type="checkbox"/> C STATE <input checked="" type="checkbox"/> D COUNTY <input type="checkbox"/> E MUNICIPAL <input type="checkbox"/> F OTHER <input type="checkbox"/> G UNKNOWN	
III INSPECTION INFORMATION			
01 DATE OF INSPECTION 5/17/88 MO/DAY/YR		02 SITE STATUS <input type="checkbox"/> ACTIVE <input checked="" type="checkbox"/> INACTIVE	
03 YEARS OF OPERATION 1929 1958 BEGINNING YEAR ENDING YEAR		UNKNOWN	
04 AGENCY PERFORMING INSPECTION (Check all that apply) <input type="checkbox"/> A EPA <input checked="" type="checkbox"/> B EPA CONTRACTOR <input type="checkbox"/> E & E/FIT <input type="checkbox"/> C MUNICIPAL <input type="checkbox"/> D MUNICIPAL CONTRACTOR (Name of firm) (Name of firm) <input type="checkbox"/> E STATE <input type="checkbox"/> F STATE CONTRACTOR <input type="checkbox"/> G OTHER (Name of firm) (Specify)			
05 CHIEF INSPECTOR Robert Overfelt		06 TITLE Task Leader	07 ORGANIZATION E & E
08 TELEPHONE NO (913) 432-9961			
09 OTHER INSPECTORS Sharon Martin		10 TITLE Site Safety Coord	11 ORGANIZATION E & E
12 TELEPHONE NO (913) 432-9961			
Ted Faile		Team Member	E & E
(913) 432-9961			
Jeff Weatherford			EPA/EP&R
(913) 236-3888			
Paul Doherty			EPA/EP&R
(913) 236-3888			
13 SITE REPRESENTATIVES INTERVIEWED Marvin Hudwalker		14 TITLE Engineer	15 ADDRESS Farmington Missouri 63640
16 TELEPHONE NO (314) 756-6775			
C G Mattson		Project Manager	Irvine California
(714) 975-5269			
17 ACCESS GAINED BY (Check one) <input checked="" type="checkbox"/> PERMISSION <input type="checkbox"/> WARRANT		18 TIME OF INSPECTION 1 500	
19 WEATHER CONDITIONS 80 F Sunny with wind gusts to 20 mph			
IV INFORMATION AVAILABLE FROM			
01 CONTACT Gene Gunn		02 OF (Agency/Organization) EPA - Superfund Branch	
03 TELEPHONE NO (913) 236-2856			
04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM Robert Overfelt		05 AGENCY E & E	06 ORGANIZATION FIT
07 TELEPHONE NO (913) 432-9961		08 DATE 7/19/88	

EPA FORM 2070-12 (7-81)

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT		I IDENTIFICATION	
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS		01 STATE MOD	02 SITE NUMBER 981126899
II HAZARDOUS CONDITIONS AND INCIDENTS			
01 <u> </u> A GROUNDWATER CONTAMINATION		02 <u> </u> OBSERVED (DATE <u> </u>) <u> </u> X POTENTIAL <u> </u> ALLEGED	
03 POPULATION POTENTIALLY AFFECTED <u> </u>		04 NARRATIVE DESCRIPTION	
There is potential for ground water contamination because the on-site landfill may release organic chelating agents which in turn could release heavy metals from the mine tailings into the surrounding ground water			
01 <u> </u> X B SURFACE WATER CONTAMINATION		02 <u> </u> X OBSERVED (DATE <u> </u>) <u> </u> POTENTIAL <u> </u> ALLEGED	
03 POPULATION POTENTIALLY AFFECTED <u> </u>		04 NARRATIVE DESCRIPTION	
Where the site abuts the river and several miles downstream the bottom of the Big River is lined with mine tailings This has raised the Pb and Zn levels slightly in the water There is potential for more tailings to erode into the river			
01 <u> </u> X C CONTAMINATION OF AIR		02 <u> </u> X OBSERVED (DATE <u>1-25-88</u>) <u> </u> POTENTIAL <u> </u> ALLEGED	
03 POPULATION POTENTIALLY AFFECTED <u> </u>		04 NARRATIVE DESCRIPTION	
Lead laden dust blows off the top of the mine tailings pile			
01 <u> </u> D FIRE/EXPLOSIVE CONDITIONS		02 <u> </u> OBSERVED (DATE <u> </u>) <u> </u> POTENTIAL <u> </u> ALLEGED	
03 POPULATION POTENTIALLY AFFECTED <u> </u>		04 NARRATIVE DESCRIPTION	
None known or reported to date			
01 <u> </u> X E DIRECT CONTACT		02 <u> </u> OBSERVED (DATE <u> </u>) <u> </u> POTENTIAL <u> </u> ALLEGED	
03 POPULATION POTENTIALLY AFFECTED <u> </u>		04 NARRATIVE DESCRIPTION	
People drive all terrain vehicles (ATVs) on the mine tailings pile for recreation Also landfill workers are exposed to the tailings daily			
01 <u> </u> X F CONTAMINATION OF SOIL		02 <u> </u> OBSERVED (DATE <u> </u>) <u> </u> POTENTIAL <u> </u> ALLEGED	
03 AREA POTENTIALLY AFFECTED <u> 600 </u>		04 NARRATIVE DESCRIPTION	
(Acres)			
The mine tailings cover approximately 600 acres			
01 <u> </u> G DRINKING WATER CONTAMINATION		02 <u> </u> OBSERVED (DATE <u> </u>) <u> </u> POTENTIAL <u> </u> ALLEGED	
03 POPULATION POTENTIALLY AFFECTED <u> </u>		04 NARRATIVE DESCRIPTION	
None known or reported to date			
01 <u> </u> H WORKER EXPOSURE/INJURY		02 <u> </u> OBSERVED (DATE <u> </u>) <u> </u> POTENTIAL <u> </u> ALLEGED	
03 WORKERS POTENTIALLY AFFECTED <u> </u>		04 NARRATIVE DESCRIPTION	
None know or reported to date			
01 <u> </u> I POPULATION EXPOSURE/INJURY		02 <u> </u> OBSERVED (DATE <u> </u>) <u> </u> POTENTIAL <u> </u> ALLEGED	
03 POPULATION POTENTIALLY AFFECTED <u> </u>		04 NARRATIVE DESCRIPTION	
None known or reported to date			

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT		I IDENTIFICATION	
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS		01 STATE MOD	02 SITE NUMBER 981126899
II HAZARDOUS CONDITIONS AND INCIDENTS (CONTINUED)			
01 <input checked="" type="checkbox"/> J DAMAGE TO FLORA	02 <input checked="" type="checkbox"/> OBSERVED (DATE <u>1-25-88</u>)	POTENTIAL	ALLEGED
04 NARRATIVE DESCRIPTION Very little if any natural recovery of vegetation has occurred Most of the 600 acres of mine tailings are virtually bare			
01 <input checked="" type="checkbox"/> K DAMAGE TO FAUNA	02 <input type="checkbox"/> OBSERVED (DATE _____)	POTENTIAL	ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species) Elevated levels of Pb Cd and Zn were found in a study that examined algae			
01 <input checked="" type="checkbox"/> L CONTAMINATION OF FOOD CHAIN	02 <input type="checkbox"/> OBSERVED (DATE _____)	POTENTIAL	ALLEGED
04 NARRATIVE DESCRIPTION Bottom feeding fish in the Big River are known to have elevated levels of Pb in their edible tissue Fish are caught for human consumption through sport fishing in the Big River			
01 <input checked="" type="checkbox"/> M UNSTABLE CONTAINMENT OF WASTES (Spills/runoff/standing liquids/leaking drums)	02 <input checked="" type="checkbox"/> OBSERVED (DATE <u>1977</u>)	POTENTIAL	ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION Erosion by wind and water of mine tailings Erosion releases tailings into the Big River and into the air			
01 <input checked="" type="checkbox"/> N DAMAGE TO OFFSITE PROPERTY	02 <input checked="" type="checkbox"/> OBSERVED (DATE <u>1982</u>)	POTENTIAL	ALLEGED
04 NARRATIVE DESCRIPTION The Big River bottom is lined with mine tailings for several miles downstream from the site			
01 <input type="checkbox"/> O CONTAMINATION OF SEWERS STORM DRAINS WWTPs	02 <input type="checkbox"/> OBSERVED (DATE _____)	POTENTIAL	ALLEGED
04 NARRATIVE DESCRIPTION None know or reported to date			
01 <input type="checkbox"/> P ILLEGAL/UNAUTHORIZED DUMPING	02 <input type="checkbox"/> OBSERVED (DATE _____)	POTENTIAL	ALLEGED
04 NARRATIVE DESCRIPTION None known or reported to date			
05 DESCRIPTION OF ANY OTHER KNOWN POTENTIAL OR ALLEGED HAZARDS			
III TOTAL POPULATION POTENTIALLY AFFECTED <u>approximately 25 000</u>			
IV COMMENTS			
V SOURCES OF INFORMATION (Cite specific references e g state files sample analysis reports)			
Preliminary Investigation on the Dynamics of metals from past and present mining activities in the Big and Black River southeastern Missouri EPA files Preliminary Assessment of the Big River Mine Tailings site E & E/FIT files			

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 5 - WATER DEMOGRAPHIC AND ENVIRONMENTAL DATA		IDENTIFICATION 01 STATE MOD 02 SITE NUMBER 981126899																
II DRINKING WATER SUPPLY																		
01 TYPE OF DRINKING SUPPLY (Check as applicable) <table style="width:100%;"> <tr> <td style="text-align: center;">SURFACE</td> <td style="text-align: center;">WELL</td> </tr> <tr> <td>COMMUNITY A <input type="checkbox"/></td> <td>B <input checked="" type="checkbox"/></td> </tr> <tr> <td>NON-COMMUNITY C <input type="checkbox"/></td> <td>D <input type="checkbox"/></td> </tr> </table>		SURFACE	WELL	COMMUNITY A <input type="checkbox"/>	B <input checked="" type="checkbox"/>	NON-COMMUNITY C <input type="checkbox"/>	D <input type="checkbox"/>	02 STATUS <table style="width:100%;"> <tr> <td style="text-align: center;">ENDANGERED</td> <td style="text-align: center;">AFFECTED</td> <td style="text-align: center;">MONITORED</td> </tr> <tr> <td>A <input type="checkbox"/></td> <td>B <input type="checkbox"/></td> <td>C <input checked="" type="checkbox"/></td> </tr> <tr> <td>D <input type="checkbox"/></td> <td>E <input type="checkbox"/></td> <td>F <input type="checkbox"/></td> </tr> </table>		ENDANGERED	AFFECTED	MONITORED	A <input type="checkbox"/>	B <input type="checkbox"/>	C <input checked="" type="checkbox"/>	D <input type="checkbox"/>	E <input type="checkbox"/>	F <input type="checkbox"/>
SURFACE	WELL																	
COMMUNITY A <input type="checkbox"/>	B <input checked="" type="checkbox"/>																	
NON-COMMUNITY C <input type="checkbox"/>	D <input type="checkbox"/>																	
ENDANGERED	AFFECTED	MONITORED																
A <input type="checkbox"/>	B <input type="checkbox"/>	C <input checked="" type="checkbox"/>																
D <input type="checkbox"/>	E <input type="checkbox"/>	F <input type="checkbox"/>																
		03 DISTANCE TO SITE approximately 2 500 feet (mi) B _____ (mi)																
III GROUNDWATER																		
01 GROUNDWATER USE IN VICINITY (Check one) <input type="checkbox"/> A ONLY SOURCE FOR DRINKING <input checked="" type="checkbox"/> B DRINKING (Other sources available) <input type="checkbox"/> C COMMERCIAL INDUSTRIAL IRRIGATION (Limited other sources available) <input type="checkbox"/> D NOT USED UNUSABLE COMMERCIAL INDUSTRIAL IRRIGATION (No other water sources available)																		
02 POPULATION SERVED BY GROUND WATER 22 517		03 DISTANCE TO NEAREST DRINKING WATER WELL approx 2 500 (mi)																
04 DEPTH TO GROUNDWATER 13 5-34 (ft)	05 DIRECTION OF GROUNDWATER FLOW toward river	06 DEPTH TO AQUIFER OF CONCERN at surface (ft)	07 POTENTIAL YIELD OF AQUIFER (gpd)															
		08 SOLE SOURCE AQUIFER <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO																
09 DESCRIPTION OF WELLS (Including usage depth and location relative to population and buildings) The Flat River Water District uses one well located in Desloge. This well is set in the Lamotte Formation and the pump is set at 410 feet. The Water District also utilizes a sealed abandoned mine shaft that is in the Bonne Terre Formation for water.																		
10 RECHARGE AREA <input type="checkbox"/> YES <input type="checkbox"/> NO COMMENTS		11 DISCHARGE AREA <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO COMMENTS																
IV SURFACE WATER																		
01 SURFACE WATER USE (Check one) <input type="checkbox"/> A RESERVOIR RECREATION DRINKING WATER SOURCE <input type="checkbox"/> B IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES <input type="checkbox"/> C COMMERCIAL INDUSTRIAL <input checked="" type="checkbox"/> D NOT CURRENTLY USED																		
02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER <table style="width:100%;"> <tr> <td style="text-align: left;">NAME</td> <td style="text-align: center;">AFFECTED</td> <td style="text-align: center;">DISTANCE TO SITE</td> </tr> <tr> <td>Big River</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;">0 (mi)</td> </tr> <tr> <td>_____</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;">_____ (mi)</td> </tr> <tr> <td>_____</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;">_____ (mi)</td> </tr> </table>				NAME	AFFECTED	DISTANCE TO SITE	Big River	<input checked="" type="checkbox"/>	0 (mi)	_____	<input type="checkbox"/>	_____ (mi)	_____	<input type="checkbox"/>	_____ (mi)			
NAME	AFFECTED	DISTANCE TO SITE																
Big River	<input checked="" type="checkbox"/>	0 (mi)																
_____	<input type="checkbox"/>	_____ (mi)																
_____	<input type="checkbox"/>	_____ (mi)																
V DEMOGRAPHIC AND PROPERTY INFORMATION																		
01 TOTAL POPULATION WITHIN <table style="width:100%;"> <tr> <td style="text-align: center;">ONE (1) MILE OF SITE</td> <td style="text-align: center;">TWO (2) MILES OF SITE</td> <td style="text-align: center;">THREE (3) MILES OF SITE</td> </tr> <tr> <td>A _____</td> <td>B _____</td> <td>C 22 517</td> </tr> <tr> <td>NO OF PERSONS</td> <td>NO OF PERSONS</td> <td>NO OF PERSONS</td> </tr> </table>		ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE	A _____	B _____	C 22 517	NO OF PERSONS	NO OF PERSONS	NO OF PERSONS	02 DISTANCE TO NEAREST POPULATION 1 000 feet (mi)							
ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE																
A _____	B _____	C 22 517																
NO OF PERSONS	NO OF PERSONS	NO OF PERSONS																
03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE Undetermined		04 DISTANCE TO NEAREST OFF-SITE BUILDING 1 000 Feet (mi)																
05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site e.g. rural village densely populated urban area) Several communities and many rural residences are located within a 3-mile radius of the site. 20 879 people live in small communities and are on municipal wells. 1 638 people are rural.																		

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 5 - WATER DEMOGRAPHIC AND ENVIRONMENTAL DATA		IDENTIFICATION 01 STATE MOD 02 SITE NUMBER 981126899	
II ENVIRONMENTAL INFORMATION			
01 PERMEABILITY OF UNSATURATED ZONE (Check one) <input type="checkbox"/> A $10^{-6} - 10^{-8}$ cm/sec <input type="checkbox"/> B $10^{-4} - 10^{-6}$ cm/sec <input type="checkbox"/> C $10^{-4} - 10^{-3}$ cm/sec <input checked="" type="checkbox"/> D GREATER THAN 10^{-3} cm/sec			
02 PERMEABILITY OF BEDROCK (Check one) <input type="checkbox"/> A IMPERMEABLE (Less than 10^{-6} cm/sec) <input type="checkbox"/> B RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) <input type="checkbox"/> C RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) <input checked="" type="checkbox"/> D VERY PERMEABLE (Greater than 10^{-2} cm/sec)			
03 DEPTH TO BEDROCK 0 (ft)	04 DEPTH OF CONTAMINATED SOIL ZONE (ft)	05 SOIL pH mildly alkaline	
06 NET PRECIPITATION 40.54 (in)	07 ONE YEAR 24 HOUR RAINFALL 3 (in)	08 SLOPE SITE SLOPE 30 % DIRECTION OF SITE SLOPE toward River	TERRAIN AVERAGE SLOPE %
09 FLOOD POTENTIAL SITE IS IN 1 YEAR FLOOD PLAN		10 SITE IS ON BARRIER ISLAND COASTAL HIGH HAZARD AREA RIVERINE FLOODWAY	
11 DISTANCE TO WETLANDS (5 acre minimum) ESTUARINE OTHER A (mi) B (mi)		12 DISTANCE TO CRITICAL HABITAT (of endangered species) (mi) ENDANGERED SPECIES	
13 LAND USE IN VICINITY DISTANCE TO COMMERCIAL/INDUSTRIAL RESIDENTIAL AREAS NATIONAL/STATE PARKS FORESTS OR WILDLIFE RESERVES AGRICULTURAL LANDS PRIME AG LAND AG LAND 0.5 (mi) 0.1 (mi) 0.5 (mi) 0.5 (mi)			
4 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY The Big River Mine Tailings site is located primarily within a horseshoe meander of the Big River and is adjacent to or in contact with the river. Site slope in some areas is at the angle of repose.			
VII SOURCES OF INFORMATION (Cite specific references e.g. state files sample analysis reports) Preliminary Assessment of the Big River Mine Tailings site E & E/FIT files PAN #FMO0616PA/TDD #F-07-8711-039 Big River Mine Tailings HRS Package E & E Soil Summary of St. Francois County Missouri USDA Soil Conservation Service			

POTENTIAL HAZARDOUS WASTE SITE		IDENTIFICATION	
EPA		SITE INSPECTION REPORT	
PART 6 - SAMPLE AND FIELD INFORMATION		01 STATE MOD	02 SITE NUMBER 981126899

II SAMPLES TAKEN			
SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL	12	EPA Region VII Laboratory	5-20-88
VEGETATION			
OTHER			

III FIELD MEASUREMENTS TAKEN	
01 TYPE None	02 COMMENTS

IV PHOTOGRAPHS AND MAPS	
01 TYPE <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> AERIAL	02 IN CUSTODY OF <u>E & E/FIT</u> (Name of organization or individual)
03 MAPS <input type="checkbox"/> YES <input type="checkbox"/> NO	04 LOCATION OF MAPS

V OTHER FIELD DATA COLLECTED (Provide narrative description)
None

VI SOURCES OF INFORMATION (Cite specific references e.g. state files sample analysis reports)
HRS of the Big River Mine Tailings site E & E/FIT files PAN #FMO0616HA/TDD #F-07-8801-021

EPA		POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 7 - OWNER INFORMATION		I IDENTIFICATION 01 STATE MOD 02 SITE NUMBER 981126899	
II CURRENT OWNER(S)			PARENT COMPANY (If applicable)		
01 NAME St Francois County		02 D+B NUMBER	08 NAME		09 D+B NUMBER
03 STREET ADDRESS (P O BOX RFD # ETC)		04 SIC CODE	10 STREET ADDRESS (P O BOX RFD # ETC)		11 SIC CODE
05 CITY Farmington	06 STATE MO	07 ZIP CODE 63640	12 CITY	13 STATE	14 ZIP CODE
01 NAME St Joe Minerals Corporation		02 D+B NUMBER	08 NAME		09 D+B NUMBER
03 STREET ADDRESS (P O BOX RFD # ETC) 3333 Michelson Drive		04 SIC CODE	10 STREET ADDRESS (P O BOX RFD # ETC)		11 SIC CODE
05 CITY Irvine	06 STATE Ca	07 ZIP CODE 92730	12 CITY	13 STATE	14 ZIP CODE
01 NAME		02 D+B NUMBER	08 NAME		09 D+B NUMBER
03 STREET ADDRESS (P O BOX RFD # ETC)		04 SIC CODE	10 STREET ADDRESS (P O BOX RFD # ETC)		11 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
III PREVIOUS OWNER(S) (List most recent first)			IV REALTY OWNER(S) (If applicable list most recent first)		
01 NAME St Joe Minerals Corporation		02 D+B NUMBER	01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P O Box RFD # etc) 3333 Michelson Drive		04 SIC CODE	03 STREET ADDRESS (P O Box RFD # etc)		04 SIC CODE
05 CITY Irvine	06 STATE Ca	07 ZIP CODE 92730	05 CITY	06 STATE	07 ZIP CODE
01 NAME		02 D+B NUMBER	01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P O Box RFD # etc)		04 SIC CODE	03 STREET ADDRESS (P O Box RFD # etc)		04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
01 NAME		02 D+B NUMBER	01 NAME		02 D+B NUMBER
03 STREET ADDRESS (P O Box RFD # etc)		04 SIC CODE	03 STREET ADDRESS (P O Box RFD # etc)		04 SIC CODE
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
V SOURCES OF INFORMATION (Cite specific references e g state files sample analysis reports)					
Preliminary Assessment of the Big River Mine Tailings site E & E/FIT files PAN #FMO0616PA/TDD #F-07-8711-039					

POTENTIAL HAZARDOUS WASTE SITE				I IDENTIFICATION	
SITE INSPECTION REPORT				01 STATE MOD	02 SITE NUMBER 981126899
PART 8 - OPERATOR INFORMATION					
II CURRENT OPERATOR (Provide if different from owner)			OPERATOR'S PARENT COMPANY (If applicable)		
01 NAME St Francois County Environmental Corporation		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P O BOX RFD # ETC)		04 SIC CODE	12 STREET ADDRESS (P O BOX RFD # ETC)		13 SIC CODE
05 CITY Desloge		06 STATE MO	07 ZIP CODE	14 CITY	15 STATE
08 YEARS OF OPERATION 15		09 NAME OF OWNER St Francois County Environmental Corporation			
III PREVIOUS OPERATOR(S) (List most recent first provide only if different from owner)			PREVIOUS OPERATORS PARENT COMPANIES (If applicable)		
01 NAME St Joe Minerals Corporation		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P O Box RFD # etc)		04 SIC CODE	12 STREET ADDRESS (P O Box RFD # etc)		13 SIC CODE
05 CITY Irvine		06 STATE Ca	07 ZIP CODE	14 CITY	15 STATE
08 YEARS OF OPERATION 30		09 NAME OF OWNER DURING THIS PERIOD St Joe Minerals Corporation			
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P O Box RFD # etc)		04 SIC CODE	12 STREET ADDRESS (P O Box RFD # etc)		13 SIC CODE
05 CITY		06 STATE	07 ZIP CODE	14 CITY	15 STATE
08 YEARS OF OPERATION		09 NAME OF OWNER DURING THIS PERIOD			
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P O Box RFD # etc)		04 SIC CODE	12 STREET ADDRESS (P O Box RFD # etc)		13 SIC CODE
05 CITY		06 STATE	07 ZIP CODE	14 CITY	15 STATE
08 YEARS OF OPERATION		09 NAME OF OWNER DURING THIS PERIOD			
01 NAME		02 D+B NUMBER	10 NAME		11 D+B NUMBER
03 STREET ADDRESS (P O Box RFD # etc)		04 SIC CODE	12 STREET ADDRESS (P O Box RFD # etc)		13 SIC CODE
05 CITY		06 STATE	07 ZIP CODE	14 CITY	15 STATE
08 YEARS OF OPERATION		09 NAME OF OWNER DURING THIS PERIOD			
IV SOURCES OF INFORMATION (Cite specific references e g state files sample analysis reports)					
Preliminary Assessment of Big River Mine Tailings site E & E/FIT files PAN #FMO0616PA/TDD #P-07-8711-039					

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 9 - GENERATOR/TRANSPORTER INFORMATION		IDENTIFICATION 01 STATE MOD 02 SITE NUMBER 981126899	
II ON-SITE GENERATOR			
01 NAME St Joe Minerals Corporation		02 D+B NUMBER	
03 STREET ADDRESS (P O BOX RFD # ETC)		04 SIC CODE 1	
05 CITY Irvine	06 STATE Ca	07 ZIP CODE	
III OFF-SITE GENERATOR(S)			
01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P O Box RFD # etc)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	
01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P O Box RFD # etc)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	
01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P O Box RFD # etc)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	
01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P O Box RFD # etc)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	
IV TRANSPORTER(S)			
01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P O Box RFD # etc)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	
01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P O Box RFD # etc)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	
01 NAME		02 D+B NUMBER	
03 STREET ADDRESS (P O Box RFD # etc)		04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	
V SOURCES OF INFORMATION (Cite specific references e g state files sample analysis reports)			
Preliminary Assessment of the Big River Mine Tailings Site E & E/FIT files PAN #FMO0616PA/TDD #F-07-8711-039			

EPA	POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 10 - PAST RESPONSE ACTIVITIES	IDENTIFICATION 01 STATE MOD 02 SITE NUMBER 981126899	
II PAST RESPONSE ACTIVITIES			
01 <u> </u> A	WATER SUPPLY CLOSED	02 DATE _____	03 AGENCY _____
04	DESCRIPTION _____		
01 <u> </u> B	TEMPORARY WATER SUPPLY PROVIDED	02 DATE _____	03 AGENCY _____
04	DESCRIPTION _____		
01 <u> </u> C	PERMANENT WATER SUPPLY PROVIDED	02 DATE _____	03 AGENCY _____
04	DESCRIPTION _____		
01 <u> </u> D	SPILED MATERIAL REMOVED	02 DATE _____	03 AGENCY _____
04	DESCRIPTION _____		
01 <u> </u> E	CONTAMINATED SOIL REMOVED	02 DATE _____	03 AGENCY _____
04	DESCRIPTION _____		
01 <u> </u> F	WASTE REPACKAGED	02 DATE _____	03 AGENCY _____
04	DESCRIPTION _____		
01 <u> </u> G	WASTE DISPOSED ELSEWHERE	02 DATE _____	03 AGENCY _____
04	DESCRIPTION _____		
01 <u> </u> H	ON SITE BURIAL	02 DATE _____	03 AGENCY _____
04	DESCRIPTION _____		
01 <u> </u> I	IN SITU CHEMICAL TREATMENT	02 DATE _____	03 AGENCY _____
04	DESCRIPTION _____		
01 <u> </u> J	IN SITU BIOLOGICAL TREATMENT	02 DATE _____	03 AGENCY _____
04	DESCRIPTION _____		
01 <u> </u> K	IN SITU PHYSICAL TREATMENT	02 DATE _____	03 AGENCY _____
04	DESCRIPTION _____		
01 <u> </u> L	ENCAPSULATION	02 DATE _____	03 AGENCY _____
04	DESCRIPTION _____		
01 <u> </u> M	EMERGENCY WASTE TREATMENT	02 DATE _____	03 AGENCY _____
04	DESCRIPTION _____		
01 <u> </u> N	CUTOFF WALLS	02 DATE _____	03 AGENCY _____
04	DESCRIPTION _____		
01 <u> </u> O	EMERGENCY DIKING/SURFACE WATER DIVERSION	02 DATE _____	03 AGENCY _____
04	DESCRIPTION _____		
01 <u> </u> P	CUTOFF TRENCHES/SUMP	02 DATE _____	03 AGENCY _____
04	DESCRIPTION _____		
01 <u> </u> Q	SUBSURFACE CUTOFF WALL	02 DATE _____	03 AGENCY _____
04	DESCRIPTION _____		

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 10 - PAST RESPONSE ACTIVITIES		I IDENTIFICATION	
EPA		01 STATE MOD	02 SITE NUMBER 981126899
II PAST RESPONSE ACTIVITIES (Continued)			
01 <u>X</u> R BARRIER WALLS CONSTRUCTED	02 DATE <u>1977 present</u>	03 AGENCY _____	
04 DESCRIPTION Several barrier walls have been constructed between 1977 and the present where gaps in the tailings formed			
01 <u>X</u> S CAPPING/COVERING	02 DATE <u>1973 present</u>	03 AGENCY _____	
04 DESCRIPTION The on-site landfill is capped with clay after filling is complete			
01 <u> </u> T BULK TANKAGE REPAIRED	02 DATE _____	03 AGENCY _____	
04 DESCRIPTION			
01 <u> </u> U GROUT CURTAIN CONSTRUCTED	02 DATE _____	03 AGENCY _____	
04 DESCRIPTION			
01 <u> </u> V BOTTOM SEALED	02 DATE _____	03 AGENCY _____	
04 DESCRIPTION			
01 <u> </u> W GAS CONTROL	02 DATE _____	03 AGENCY _____	
04 DESCRIPTION			
01 <u> </u> X FIRE CONTROL	02 DATE _____	03 AGENCY _____	
04 DESCRIPTION			
01 <u> </u> Y LEACHATE TREATMENT	02 DATE _____	03 AGENCY _____	
04 DESCRIPTION			
01 <u> </u> Z AREA EVACUATED	02 DATE _____	03 AGENCY _____	
04 DESCRIPTION			
01 <u> </u> 1 ACCESS TO SITE RESTRICTED	02 DATE _____	03 AGENCY _____	
04 DESCRIPTION			
01 <u> </u> 2 POPULATION RELOCATED	02 DATE _____	03 AGENCY _____	
04 DESCRIPTION			
01 <u> </u> 3 OTHER REMEDIAL ACTIVITIES	02 DATE _____	03 AGENCY _____	
04 DESCRIPTION Several remedial activities been attempted since the major collapse of mine tailings into Big River in 1977 These are discussed in the Preliminary Assessment report			
V SOURCES OF INFORMATION (Cite specific references e g state files sample analysis reports)			
Preliminary Assessment of the Big River Mine Tailings site E & E/FIT files PAN #PMO0616PA/TDD #F-07-8711-039			

EPA	POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 11 - ENFORCEMENT INFORMATION	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">I IDENTIFICATION</td> </tr> <tr> <td style="width: 50%; text-align: center;">01 STATE MOD</td> <td style="width: 50%; text-align: center;">02 SITE NUMBER 981126899</td> </tr> </table>	I IDENTIFICATION		01 STATE MOD	02 SITE NUMBER 981126899
I IDENTIFICATION						
01 STATE MOD	02 SITE NUMBER 981126899					
II ENFORCEMENT INFORMATION						
01 PAST REGULATORY/ENFORCEMENT ACTION <input type="checkbox"/> YES <input type="checkbox"/> NO						
02 DESCRIPTION OF FEDERAL STATE LOCAL REGULATORY/ENFORCEMENT ACTION						
III SOURCES OF INFORMATION (Cite specific references e g state files sample analysis reports)						
Preliminary Assessment of the Big River Mine Tailings site E & E/PIT files PAN #FMO0616PA/TDD #F-07-8711-039						

ACTIVITY LEADER(Print)		NAME OF SURVEY OR ACTIVITY				DATE OF COLLECTION			SHEET		
530 2500-17		BGR Min T2/202				16	5	28	1	of 1	
DAY		MONTH		YEAR							
CONTENTS OF SHIPMENT											
SAMPLE NUMBER	TYPE OF CONTAINERS				SAMPLED MEDIA				RECEIVING LABORATORY REMARKS/OTHER INFORMATION (condition of samples upon receipt other sample numbers etc.)		
	CUBITAINER	BOTTLE	BOTTLE	VDA SET (2 VIALS EA)	water	soil	sediment	dust			other
NUMBERS OF CONTAINERS PER SAMPLE NUMBER											
181001		X				X					
181002		X				X					
181003		X				X					
181004		X				X					
181005		X				X					
181006		X				X					
181007		X				X					
181008		X				X					
181009		X				X					
181010		X				X					
181011		X				X					
181012		X				X	X				
181013		X				X					
DESCRIPTION OF SHIPMENT											
MODE OF SHIPMENT											
13 PIECE(S) CONSISTING OF 2 BOX(ES)											
1 ICE CHEST(S) OTHER											
COMMERCIAL CARRIER											
COURIER											
SAMPLER CONVEYED (SHIPPING DOCUMENT NUMBER)											
PERSONNEL CUSTODY RECORD											
RELINQUISHED BY (SAMPLER)		DATE	TIME	RECEIVED BY		REASON FOR CHANGE OF CUSTODY					
Robert C. O'Neil		5-17-88	0710	T. J. Fair		transport to Region VII Lab					
SEALED UNSEALED				SEALED UNSEALED							
RELINQUISHED BY		DATE	TIME	RECEIVED BY		REASON FOR CHANGE OF CUSTODY					
T. J. Fair		5/17/88	1430	Robert C. O'Neil		A. C. L. Case					
SEALED UNSEALED				SEALED UNSEALED							
RELINQUISHED BY		DATE	TIME	RECEIVED BY		REASON FOR CHANGE OF CUSTODY					
SEALED UNSEALED				SEALED UNSEALED							



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
25 FUNSTON ROAD
KANSAS CITY KANSAS 66115

Date 5/20/88

MEMORANDUM

SUBJECT Data Transmittal for Activity # TK981
Site Description Big River Mine Tailings

FROM Robert D Kleopfer, Ph D ⁸⁰⁴
Chief, Laboratory Branch, ENSV

TO Charles P Hensley
Chief, Emergency Planning and Response Branch ENSV

ATTN P Doherty

Attached is the data transmittal for the above referenced site

This should be considered a Partial or ☒ Complete data transmittal
(completes transmittal of) If you have any questions
or comments, please contact Dee Simmons at 236-3881

Attachments

cc Data File

RECEIVED
MAY 24 1988
E&E K.C.K.

EPA Region VII

Data Qualification Codes

- U - The material was analyzed for, but was not detected The associated numerical value is the sample quantitation limit
- M - Compound was qualitatively identified, however, quantitative value is less than contract required quantitation limits (CLP data), or value is less than limit of quantitation (EPA data) and is therefore, an estimated value
- J - The associated numerical value is an estimated quantity
- I - The data are invalid (compound may or may not be present) Resampling and/or reanalysis is necessary for verification
- O - Sample lost or not analyzed
- L - Value known to be higher than value reported
- N - Presumptive evidence of presence of material
- NA - Sample was not analyzed for this compound
- NJ - Presumptive evidence of the presence of the material at an estimated quantity
- UJ - The material was analyzed for, but was not detected The sample quantitation limit is an estimated quantity

Codes for Flash Point Data

- L - The sample did not ignite or "flash " This is the highest temperature at which the sample was tested It is possible that the material may be ignitable at higher temperatures
- K - The sample did ignite or "flash" at the lowest temperature tested This is usually the ambient temperature at the time of the test It is possible that the material may be ignitable at even lower temperatures

South east
#1 See field Map

0-6 Sharon Mountain

5

1

0

1691 1660 S

WHITE

Table 1. Demographic characteristics of study population

Samson Z. Novitsky 11/26/00 4.00

2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962	1961	1960	1959	1958	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948	1947	1946	1945	1944	1943	1942	1941	1940	1939	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925	1924	1923	1922	1921	1920	1919	1918	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902	1901	1900	1899	1898	1897	1896	1895	1894	1893	1892	1891	1890	1889	1888	1887	1886	1885	1884	1883	1882	1881	1880	1879	1878	1877	1876	1875	1874	1873	1872	1871	1870	1869	1868	1867	1866	1865	1864	1863	1862	1861	1860	1859	1858	1857	1856	1855	1854	1853	1852	1851	1850	1849	1848	1847	1846	1845	1844	1843	1842	1841	1840	1839	1838	1837	1836	1835	1834	1833	1832	1831	1830	1829	1828	1827	1826	1825	1824	1823	1822	1821	1820	1819	1818	1817	1816	1815	1814	1813	1812	1811	1810	1809	1808	1807	1806	1805	1804	1803	1802	1801	1800	1799	1798	1797	1796	1795	1794	1793	1792	1791	1790	1789	1788	1787	1786	1785	1784	1783	1782	1781	1780	1779	1778	1777	1776	1775	1774	1773	1772	1771	1770	1769	1768	1767	1766	1765	1764	1763	1762	1761	1760	1759	1758	1757	1756	1755	1754	1753	1752	1751	1750	1749	1748	1747	1746	1745	1744	1743	1742	1741	1740	1739	1738	1737	1736	1735	1734	1733	1732	1731	1730	1729	1728	1727	1726	1725	1724	1723	1722	1721	1720	1719	1718	1717	1716	1715	1714	1713	1712	1711	1710	1709	1708	1707	1706	1705	1704	1703	1702	1701	1700	1699	1698	1697	1696	1695	1694	1693	1692	1691	1690	1689	1688	1687	1686	1685	1684	1683	1682	1681	1680	1679	1678	1677	1676	1675	1674	1673	1672	1671	1670	1669	1668	1667	1666	1665	1664	1663	1662	1661	1660	1659	1658	1657	1656	1655	1654	1653	1652	1651	1650	1649	1648	1647	1646	1645	1644	1643	1642	1641	1640	1639	1638	1637	1636	1635	1634	1633	1632	1631	1630	1629	1628	1627	1626	1625	1624	1623	1622	1621	1620	1619	1618	1617	1616	1615	1614	1613	1612	1611	1610	1609	1608	1607	1606	1605	1604	1603	1602	1601	1600	1599	1598	1597	1596	1595	1594	1593	1592	1591	1590	1589	1588	1587	1586	1585	1584	1583	1582	1581	1580	1579	1578	1577	1576	1575	1574	1573	1572	1571	1570	1569	1568	1567	1566	1565	1564	1563	1562	1561	1560	1559	1558	1557	1556	1555
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1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	2030-2031	2031-2032	2032-2033	2033-2034	2034-2035	2035-2036	2036-2037	2037-2038	2038-2039	2039-2040	2040-2041	2041-2042	2042-2043	2043-2044	2044-2045	2045-2046	2046-2047	2047-2048	2048-2049	2049-2050	2050-2051	2051-2052	2052-2053	2053-2054	2054-2055	2055-2056	2056-2057	2057-2058	2058-2059	2059-2060	2060-2061	2061-2062	2062-2063	2063-2064	2064-2065	2065-2066	2066-2067	2067-2068	2068-2069	2069-2070	2070-2071	2071-2072	2072-2073	2073-2074	2074-2075	2075-2076	2076-2077	2077-2078	2078-2079	2079-2080	2080-2081	2081-2082	2082-2083	2083-2084	2084-2085	2085-2086	2086-2087	2087-2088	2088-2089	2089-2090	2090-2091	2091-2092	2092-2093	2093-2094	2094-2095	2095-2096	2096-2097	2097-2098	2098-2099	2099-2100	2100-2101	2101-2102	2102-2103	2103-2104	2104-2105	2105-2106	2106-2107	2107-2108	2108-2109	2109-2110	2110-2111	2111-2112	2112-2113	2113-2114	2114-2115	2115-2116	2116-2117	2117-2118	2118-2119	2119-2120	2120-2121	2121-2122	2122-2123	2123-2124	2124-2125	2125-2126	2126-2127	2127-2128	2128-2129	2129-2130	2130-2131	2131-2132	2132-2133	2133-2134	2134-2135	2135-2136	2136-2137	2137-2138	2138-2139	2139-2140	2140-2141	2141-2142	2142-2143	2143-2144	2144-2145	2145-2146	2146-2147	2147-2148	2148-2149	2149-2150	2150-2151	2151-2152	2152-2153	2153-2154	2154-2155	2155-2156	2156-2157	2157-2158	2158-2159	2159-2160	2160-2161	2161-2162	2162-2163	2163-2164	2164-2165	2165-2166	2166-2167	2167-2168	2168-2169	2169-2170	2170-2171	2171-2172	2172-2173	2173-2174	2174-2175	2175-2176	2176-2177	2177-2178	2178-2179	2179-2180	2180-2181	2181-2182	2182-2183	2183-2184	2184-2185	2185-2186	2186-2187	2187-2188	2188-2189	2189-2190	2190-2191	2191-2192	2192-2193	2193-2194	2194-2195	2195-2196	2196-2197	2197-2198	2198-2199	2199-2200	2200-2201	2201-2202	2202-2203	2203-2204	2204-2205	2205-2206	2206-2207	2207-2208	2208-2209	2209-2210	2210-2211	2211-2212	2212-2213	2213-2214	2214-2215	2215-2216	2216-2217	2217-2218	2218-2219	2219-2220	2220-2221	2221-2222	2222-2223	2223-2224	2224-2225	2225-2226	2226-2227	2227-2228	2228-2229	2229-2230	2230-2231	2231-2232	2232-2233	2233-2234	2234-2235	2235-2236	2236-2237	2237-2238	2238-2239	2239-2240	2240-2241	2241-2242	2242-2243	2243-2244	2244-2245	2245-2246	2246-2247	2247-2248	2248-2249	2249-2250	2250-2251	2251-2252	2252-2253	2253-2254	2254-2255	2255-2256	2256-2257	2257-2258	2258-2259	2259-2260	2260-2261	2261-2262	2262-2263	2263-2264	2264-2265	2265-2266	2266-2267	2267-2268	2268-2269	2269-2270	2270-2271	22
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ENVIRONMENTAL PROTECTION AGENCY REGION II
 ENVIRONMENTAL SERVICES DIVISION NEW YORK CITY 10001

Site Name PIG FIVER MINE TAILINGS
 Location FRESCO MO

Site Number
 Site Code

Collected YR 88 MO 5 Day 16 Time 1620 Leader E OVERFELT

Sample Number T1981003 SMO #

Sample Media circle one

DIL DUST FINSATE SEDIMENT WATER OTHER

Sample Split (circle one) YES NO

Container Tag Color Preservative Analysis requested

INF WHITE TOTAL METALS

Field # 0-6 Fan # Aliquots 5

Collector Sharon Martin

COMMENTS OF FIELD PERSONNEL

Site Description

#500 see field Map
#3

ENVIRONMENTAL PROTECTION AGENCY
UNITED STATES DEPARTMENT OF JUSTICE
WASHINGTON, D.C. 20541

110 101 BIG RIVER MINE TAILINGS
201 01 FALLOE RD

Site Number
Site Code

Collected F 98 NO 5 Day 16 Time 1630 Leader B OVFFELT

Samc1 _ Number T1 981004

SMD #

circle one)

15 DIRT KINSATE SEDIMENT WATER OTHER _____

a c' + circle one) YES NO

Item	Color	Preserved	Analysis Requested
1	Red	Yes	Yes
2	Blue	No	No
3	Green	Yes	Yes
4	Yellow	No	No
5	Purple	Yes	Yes
6	Orange	No	No
7	Pink	Yes	Yes
8	White	No	No
9	Black	Yes	Yes
10	Grey	No	No

14F WHITE

TOTAL METALS

Lot 0-611 Fan # Aliquots 5

Name: Ted Fale

COMMENTS OF FIELD PERSONNEL

Site Description # 4 See field map

Site Name BIG RIVER MINE TAILINGS Site Number
Location ICESLOGE MO Site Code

Collected YR 88 MO 5 Day 16 Time 1640 Leader P OVERFELT

Sample Number T1981005 SMO #

Sample Media (circle one)

SOIL DUST KINSATE SEDIMENT WATER OTHER

Sample Split (circle one) YES NO

Sample container Tap Color Preservative Analysis Requested
8 02 JAF WHITE TOTAL METALS

Depth 0-6 Fan # Aliquots 5

Sampler Sharon Martin

COMMENTS OF FIELD PERSONNEL

Site Description #5 See field Map

U.S. ENVIRONMENTAL PROTECTION AGENCY REGION II
WATER POLLUTION SERVICES DIVISION HUNTSVILLE ALABAMA CITY 35895

Site Name BIG RIVER MINE TAILINGS
Location DESLOGE MO

Site Number
Site Code

Collected MAR 98 MO 5 Day 16 Time 1645 Leader P. O'NEILL T

Sample Number T1981004

Site #

Sample Media (circle one)

SOIL DUST FINE SATE SEDIMENT WATER OTHER

Sample Split (Circle one)

YES NO

Sample Container Tag Color Preservative Analytical Requested

5 L JAR

WHITE

TOTAL METALS

Depth 0-6 Fan # Aliquots 5

Sampler Sharon Martin

COMMENTS OF FIELD PERSONNEL

Site Description

6 See field Map

Site Name BIG RIVER MINE TAILINGS
Location DESLOVE MO

Site Number
Site Code

Collected APR 88 MO 5 Day 16 Time 1650 Leader B OVERFETT

Sample Number T1981007

SMD #

Sample Media circle one

SOIL, DUST RINSATE SEDIMENT WATER OTHER

Sample Col't (circle one) YES

NO

Sample Container Tag Color Preservation Analysis Requested

50 LBS

WHITE

TOTAL METALS

Depth 0-6

Fan #

Aliquots 5

Sampler

Ted Faile

COMMENTS OF FIELD PERSONNEL

Site Description

#7 See field Map

Site Name PIG RIVER MINE TAILINGS Site Number
Section CLOSURE NO Site Code

Collected YR 88 MO 2 Day 16 Time 1655 Leader B OVERFERT

Sample Number T1981003 SMO #

Sample Media (circle one)

DUST DUST RINSATE SEDIMENT WATER OTHER

Split (circle one) YES NO

Container Type Color Preservative Analysis requested

WHITE TOTAL METALS

Depth 0-6 Feet # Aliquots 5

Sampler Sharon Martin

COMMENTS OF FIELD PERSONNEL

Site Description

8
See field map

FIELD SHEET
U.S. ENVIRONMENTAL PROTECTION AGENCY REGION II
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD PHOENIX CITY MS 66115

Site Name BIG RIVER MINE TAILINGS
Loc t or DESLOGE MO

Site Number
Site Code

Collected YR 38 ME 165 Day 16 Time 1700 Leader B OVERFELT

Sample Number T198100 J D

SMD #

Sample Media (circle one)

SOIL DUST RINSATE SEDIMENT WATER OTHER

Sampl Split (circle one) YES NO

Sample Container Tag Color Preservative Analysis Requested

8 OZ 1AF

WHITE

TOTAL METALS

Depth 0-6" Fan # Aliquots 5

Sampler Sharon Martin

COMMENTS OF FIELD PERSONNEL

Site Description

8 See field Map

FIELD SHEET
U.S. ENVIRONMENTAL PROTECTION AGENCY REGIONAL OFFICE
ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, MO 64115

Site Name PIG RIVER MINE TAILINGS
Location OSAGE MO

Site Number
Site Code

Collected YF 98 MO 5 Day 16 Time 1705 Leader B. OVEFFELT

Sample Number T1981010

SMD #

Sample Media (circle one)

(OIL) DUST RINSATE SEDIMENT WATER OTHER

Sample Split (circle one) YES

(NO)

Sample Container Tap Color Preservative Analysis Requested

500 JAR

WHITE

TOTAL METALS

Depth 0-6" Fan # Aliquots 5

Sampler Ted Faile

COMMENTS OF FIELD PERSONNEL

Site Description

9 see field Map

FIELD SHEET
U S ENVIRONMENTAL PROTECTION AGENCY REGION II
ENVIRONMENTAL SERVICES DIV 25 FUNSTON RD KANSAS CITY KS 64115

recycled paper

Site Name BIG RIVER MINE TAILINGS Site Number
Location DESLOGE MO Site Code

Collected YR 88 MO 5 Day 16 Time 1255 Leader B OVERFETT

Sample Number T1981011 SMO #

Sample Media (circle one)

OIL DUST RINSATE SEDIMENT WATER OTHER

Sample Split (circle one) YES NO

Sample Container Tap Color Preservative Analysis Requested

8 OZ JAR WHITE TOTAL METALS

Depth 0-6" Fan # Aliquots 5

Sampler Sharon Martin

COMMENTS OF FIELD PERSONNEL

Site Description Location #1 off site
background

FIELD SHEET

U.S. ENVIRONMENTAL PROTECTION AGENCY REGION II
ENVIRONMENTAL SERVICES DIVISION 25 HUNTERTON RD. KANSAS CITY, MO 64115

Site Name RIG FIVER MINE TAILINGS
Location DESLODE MO

Site Number
Site Code

Collected YR 88 MO 5 Day 16 Time 1800 Leader P OVERFELT

Sample Number T1981012

SMD #

Sample Media (circle one)

SOIL DUST RINSATE SEDIMENT WATER OTHER

Sample Split (circle one) YES

NO

Sample Container Tag Color Preservative Analysis Requested

50 JAF

WHITE

TOTAL METALS

Depth 0-6" Fan # Aliquots 5

Sampler Sharon Martin

COMMENTS OF FIELD PERSONNEL

Site Description Location # 2 off site
Background

Background

Location # 3 of site

PERMITS OF FIELD PERSONNEL

Sharon Martin

5

Per #

0-64

TOTAL METALS

WHITE

10

1000

1000

1000

100

1000

SEDIMENT WATER OTHER

1000

1000

1000

1000

1000

1000

1000

1000

TITLE BIG RIVER MINE MATRIX SEDIMENT UNITS MG/KG
 LAE EPA REGION VII METHOD. 0015/7 CASE
 SAMPLE REF 212 ANALYST/ENTRY CRS REVIEWER DATE 05/19/88
 DATA FILL GS1

		TK981001	TK981002	TK981003	TK981004
SILVER	MG/KG	1 3	1.7	1 2	1 5
ALUMINUM	MG/KG	690.0	620 0	650.0	790 0
ARSENIC	MG/KG	10.0U	10 0U	10 0U	12 0U
BARIUM	MG/KG	2 3	1 9	2 1	2 5
BERYLLIUM	MG/KG	.71	57	62	77
CADMIUM	MG/KG	15.0	17.0	12 0	16 0
COBALT	MG/KG	14 0	9.8	12 0	15 0
CHROMIUM	MG/KG	1.4	1.2	1.4	1.7
COFFER	MG/KG	64 0	35 0	47 0	56 0
IRON	MG/KG	35000 0	22000 0	31000 0	33000 0
MANGANESE	MG/KG	1100 0	3900 0	3900 0	4200 0
MOLYBDENUM	MG/KG	4 6	3.7	4 3	4 9
NICKEL	MG/KG	12 0	6.9	9 7	13 0
LEAD	MG/KG	1200 0	1300 0	1100 0	880 0
ANTIMONY	MG/KG	10 0U	1 0U	10 0U	12 0U
SELENIUM	MG/KG	100 0U	100 0U	100 0U	120 0U
TITANIUM	MG/KG	N/A	N/A	N/A	N/A
THALLIUM	MG/KG	530 0U	500 0U	500 0U	720 0U
VANADIUM	MG/KG	5 2	1.5	4 6	5 6
ZINC	MG/KG	830.0	1000 0	680 0	900 0
CALCIUM	MG/KG	200000 0	190000 0	200000 0	190000 0
MAGNESIUM	MG/KG	96000 0	97000 0	98000 0	96000 0
SODIUM	MG/KG	5800 0	5400 0	5500 0	6900 0
POTASSIUM	MG/KG	170 0	120 0	140 0	260 0

DATE 05/19/88

		TK981005	TK981006	TK981007	TK981008
SILVER	MG/KG	1.7	1.4	85	1 1
ALUMINUM	MG/KG	6730 0	780 0	670 0	590 0
ARSENIC	MG/KG	10 0U	11 0U	10 0U	10 0U
BARIUM	MG/KG	2 2	2.4	2.0	1 8
BERYLLIUM	MG/KG	70	76	70	61
CADMIUM	MG/KG	19.0	16.0	8 4	11 0
COBALT	MG/KG	14.0	17 0	18 0	14 0
CHROMIUM	MG/KG	1 6	1.4	1 ^	1 3
COFFER	MG/KG	70.0	100 0	87 0	64 0
IRON	MG/KG	32000.0	35000 0	33000 0	31000 0
MANGANESE	MG/KG	4000 0	4200 0	4000 0	3900 0
MOLYBDENUM	MG/KG	4 8	4.9	4 5	4 2
NICKEL	MG/KG	12 0	14 0	17 0	12 0
LEAD	MG/KG	1000 0	1300 0	970 0	1200 0
ANTIMONY	MG/KG	10.0U	11 0U	10 0U	10 0U
SELENIUM	MG/KG	100 0U	110 0U	100 0U	100 0U
TITANIUM	MG/KG	N/A	N/A	N/A	N/A
THALLIUM	MG/KG	610 0U	650.0U	550.0U	500 0U
VANADIUM	MG/KG	5 0	5 5	5 1	4 0
ZINC	MG/KG	1100 0	810 0	370 0	610 0
CALCIUM	MG/KG	200000.0	190000 0	180000 0	190000 0
MAGNESIUM	MG/KG	97000 0	92000 0	90000 0	92000 0
SODIUM	MG/KG	6400 0	6500.0	5900 0	5400 0
POTASSIUM	MG/KG	190 0	270 0	180 0	130 0

ANALYSIS	TYPE	TOTAL	METALS
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9
10	10	10	10
11	11	11	11
12	12	12	12
13	13	13	13
14	14	14	14
15	15	15	15
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52	52	52	52
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56	56	56	56
57	57	57	57
58	58	58	58
59	59	59	59
60	60	60	60
61	61	61	61
62	62	62	62
63	63	63	63
64	64	64	64
65	65	65	65
66	66	66	66
67	67	67	67
68	68	68	68
69	69	69	69
70	70	70	70
71	71	71	71
72	72	72	72
73	73	73	73
74	74	74	74
75	75	75	75
76	76	76	76
77	77	77	77
78	78	78	78
79	79	79	79
80	80	80	80
81	81	81	81
82	82	82	82
83	83	83	83
84	84	84	84
85	85	85	85
86	86	86	86
87	87	87	87
88	88	88	88
89	89	89	89
90	90	90	90
91	91	91	91
92	92	92	92
93	93	93	93
94	94	94	94
95	95	95	95
96	96	96	96
97	97	97	97
98	98	98	98
99	99	99	99
100	100	100	100

TITLE BIG RIVER MINE

LAE EFA REGION VII

SAMPLE FREF 212 ANALYST/ENTRY

CRS

MATRIX SEDIMENT

METHOD 2001577

REVIEWER

DATA FILE GS1

MENT 10.2 UNITS MG/MG

01577-7186 CASE

--- AD DATE 05/19/88

TA 981009D

TK981010

TA981011

TT 981012

		1 2	1 5	50U	20U
SILVER	MG/KG				
ALUMINUM	MG/KG	620 0	670.0	9000 0	5100 0
ARSENIC	MG/KG	10.0U	10 0U	13.0U	10 0U
BARIUM	MG/KG	1 9	2.2	270 0	300 0
BERYLLIUM	MG/KG	65	71	.81	52
CADMIUM	MG/KG	13 0	17 0	2 0U	10 0U
CORAL	MG/KG	15 0	16.0	15 0	18 0
CHROMIUM	MG/KG	1 3	1 4	10 0	11 0
COFFEE	MG/KG	78 0	92 0	26 0	26.0
IRON	MG/KG	32000 0	35000 0	20000 0	24000.0
MANGANESE	MG/KG	3800 0	4100 0	1400 0	1500 0
MOLYBDENUM	MG/KG	4 4	4.6	6 9	4 7
NICKEL	MG/KG	13 0	14.0	21 0	18 0
LEAD	MG/KG	1300 0	1400 0	410.0	560 0
ANTIMONY	MG/KG	10 0U	10 0U	2 0U	1 0U
SELENIUM	MG/KG	100 0U	100 0U	20 0U	10 0U
TITANIUM	MG/KG	N/A	N/A	N/A	N/A
THALLIUM	MG/KG	500 0U	520.0U	100 0U	50 0U
VANADIUM	MG/KG	4.7	5 2	31 0	22 0
ZINC	MG/KG	700.0	870 0	99 0	99 0
CALCIUM	MG/KG	190000 0	190000 0	30000 0	45000.0
MAGNESIUM	MG/KG	92000 0	92000 0	16000 0	21000.0
SODIUM	MG/KG	5500 0	5800 0	2200 0	2600 0
POTASSIUM	MG/KG	140 0	140 0	1500 0	1100 0

ANALYSIS TYPE: TOTAL METALS

TITLE BIG RIVER MINE

LAB EPA REGION VII

SAMPLE FREF --2nd-- ANALYST/ENTRY

GRS

2/10

MATRIX: SEDIMENT

METHOD: 2001S77

REVIEWER: --

DATA FILE: GS1

UNITS MG/KG

CASE

DATE. 05/19/88

TK981013

SILVER	MG/KG	.50U
ALUMINUM	MG/KG	6600 0
ARSENIC	MG/KG	12.0U
BARIUM	MG/KG	140.0
BERYLLIUM	MG/KG	42
CADMIUM	MG/KG	2.0U
COBALT	MG/KG	11.0
CHROMIUM	MG/KG	6.3
COFFER	MG/KG	29.0
IRON	MG/KG	15000 0
MANGANESE	MG/KG	1100 0
MOLYBDENUM	MG/KG	5.2
NICKEL	MG/KG	10 0
LEAD	MG/KG	570.0
ANTIMONY	MG/KG	2.0U
SELENIUM	MG/KG	20 0U
TITANIUM	MG/KG	N/A
THALLIUM	MG/KG	100 0U
VANADIUM	MG/KG	19 0
ZINC	MG/KG	97.0
CALCIUM	MG/KG	44000 0
MAGNESIUM	MG/KG	23000.0
SODIUM	MG/KG	2800 0
POTASSIUM	MG/KG	1200.0